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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/036,216	12/28/2001	Darin J. Beesley	702.117	5241

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EXAMINER
TRAN, DALENA

ART UNIT	PAPER NUMBER
3661	

DATE MAILED: 03/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _28 December 2001_ .

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-38_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-38_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _4_ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

DETAILED ACTION

Notice to Applicant(s)

1.   This application has been examined. Claims 1-38 are pending.

2.   The prior art submitted on 3/29/02 has been considered.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1-9,11-12,14-15,25-28, and 30-31, are rejected under 35 U.S.C.103(a) as being

unpatentable over Livshutz et al. (6,112,200) in view of Israni et al. (6,308,177).

As per claim 1, Livshutz et al. disclose a method for organizing roadway network data in

a memory storage device, comprising: providing a data set indicative of a roadway network (see

columns 6-7, lines 62-25; and column 7, lines 46-67); and identifying proximity criteria for

intersection between roads in roadway network, wherein each of intersections is indicative of a

node (see column 7, lines 26-46). Livshutz et al. do not disclose node block. However, Israni

et al. disclose grouping nodes into a node block based on proximity criteria (see columns 11-13,

lines 60-10), and storing node records containing data indicative of nodes, node records being

stored as a group in node block in contiguous memory (see columns 25-27, lines 20-37). It

would have been obvious to one of ordinary skill in the art at the time the invention was made to

modify the teach of Livshutz et al. by combining grouping nodes into a node block based on

proximity criteria, and storing node records containing data indicative of nodes, node records

being stored as a group in node block in contiguous memory to provide an improved computer readable storage medium product having geographic data stored thereon for use in navigation systems.

As per claim 2, Livshutz et al. disclose assigning a unique number to each node based on geographic coordinates of node (see column 17, lines 15-67).

As per claim 3, Livshutz et al. disclose reordering nodes into a one dimensional array of nodes based on proximity criteria and dividing one dimensional array of nodes into multiple node blocks (see columns 15-17, lines 30-15).

As per claim 4, Livshutz et al. disclose storing data indicative of a plurality of nodes in an equal plurality of node records, and storing plurality of node records in adjacent memory locations (see columns 22-23, lines 56-13).

As per claim 5, Livshutz et al. do not disclose node block. However, Israni et al. disclose stores node block in a long term memory as a contiguous memory section having a length configured to be loaded into a work space memory as a single, unitary block of node records (see columns 49-52, lines 45-43). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Livshutz et al. by combining stores node block in a long term memory as a contiguous memory section having a length configured to be loaded into a work space memory as a single, unitary block of node records to provide a desired level of navigating functionality to the end user that navigation systems operate efficiently in order to provide navigating information relatively quickly.

As per claim 6, Livshutz et al. do not disclose a block header. However, Israni et al. disclose storing node block at least one of a block header and block footer comprising

characteristic information describing at least one road segment feature descriptive of roadway segment leading to at least two nodes in node block (see columns 48-49, lines 10-43). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Livshutz et al. by combining storing node block at least one of a block header and block footer comprising characteristic information describing at least one road segment feature descriptive of roadway segment leading to at least two nodes in node block to provide the information in the geographic database in a format more efficient for use by each of the navigation functions.

As per claim 7, Livshutz et al. disclose a table associated with node records containing a list of features descriptive of road segments interconnecting nodes, at least one node record containing an index into table identifying a feature representative of a node associated with at least one node record (see column 8, lines 35-56).

As per claim 9, Livshutz et al. do not disclose bearing component. However, Israni et al. disclose for a first node in data set, identifying an adjacent node and a road segment connecting first node and adjacent node (see columns 27-29, lines 38-34), identifying for adjacent node a bearing component and a distance component representative of a direction of travel along, and length of road segment, and storing bearing and distance component in a node record associated with first node (see columns 38-40, lines 42-39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Livshutz et al. by combining identifying for adjacent node a bearing component and a distance component representative of a direction of travel along, and length of road segment, and storing bearing and

distance component in a node record associated with first node to obtain the routing road segment data entities for an optimum route.

As per claim 11, Livshutz et al. disclose identifying adjacency information for nodes directly connected to a first node and storing adjacency information for each of nodes in a list of sub-records (see columns 14-15, lines 16-30).

As per claim 12, Livshutz et al. do not disclose node block. However, Israni et al. disclose identifying a geographic center of nodes grouped in node block and storing geographic center with node block (see columns 30-33, lines 60-37). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Livshutz et al. by combining identifying a geographic center of nodes grouped in node block and storing geographic center with node block for generating a guided route image on the map.

As per claim 14, Livshutz et al. disclose storing a table of features descriptive of road segments interconnecting nodes, and storing in each node record an offset to a location in memory at which table is stored (see columns 12-14, lines 48-14).

As per claim 15, Livshutz et al. do not disclose a Hilbert space filling curve. However, Israni et al. disclose grouping orders nodes using a Hilbert space filling curve (see columns 42-44, lines 12-44). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Livshutz et al. by combining grouping orders nodes using a Hilbert space filling curve for accurately organizing a roadway network data.

Claims 25 and 26, are data structure system corresponding to method claims 1 and 11 above. Therefore, they are rejected for the same rationales set forth as above.

Claims 27-28, are data structure system corresponding to method claim 9 above. Therefore, they are rejected for the same rationales set forth as above.

Claims 30 and 31, are data structure system corresponding to method claims 7 and 12 above. Therefore, they are rejected for the same rationales set forth as above.

5.   Claims 10, and 29, are rejected under 35 U.S.C.103(a) as being unpatentable over Livshutz et al. (6,112,200), and Israni et al. (6,308,177) as applied to claim 1 above, and further in view of Moroto et al. (4,943,925).

As per claim 10, Livshutz et al., and Israni et al. do not disclose outgoing bearing between two nodes. However, Moroto et al. disclose identifying an outgoing bearing and a straight line bearing between two nodes in data set, two nodes being connected by a road segment and by a straight line, outgoing bearing representing a direction at which road segment extends from one of two nodes, straight line bearing representing a direction at which straight line extends from one of two nodes (see columns 10-13, lines 13-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Livshutz et al. by combining identifying an outgoing bearing and a straight line bearing between two nodes in data set, two nodes being connected by a road segment and by a straight line, outgoing bearing representing a direction at which road segment extends from one of two nodes, straight line bearing representing a direction at which straight line extends from one of two nodes for calculating the present position with a unit distance between nodes of a road selected.

Claim 29, is data structure system corresponding to method claim 10 above. Therefore, it is rejected for the same rationales set forth as above.

6.   Claims 13, and 32, are rejected under 35 U.S.C.103(a) as being unpatentable over

Livshutz et al. (6,112,200), and Israni et al. (6,308,177) as applied to claim 1 above, and further

in view of Nomura (6,421,659).

As per claims 13, and 32, Livshutz et al., and Israni et al. do not disclose relative offset

between a geographic location. However, Nomura discloses identifying a relative offset between

a geographic location of a first node in node block and a geographic center associated with node

block, and storing relative offset in a node record associated with first node (see columns 4-5,

lines 64-27). It would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the teach of Livshutz et al., and Israni et al. by combining

identifying a relative offset between a geographic location of a first node in node block and a

geographic center associated with node block, and storing relative offset in a node record

associated with first node for accurately determine a distance between geographic location.

Claim 32, is data structure system corresponding to method claims 13-14 above.

Therefore, it is rejected for the same rationales set forth as above.

7.   Claims 16-17,19-20,22-23,33-35, and 37, are rejected under 35 U.S.C.103(a) as being

unpatentable over Tanimoto (6,256,579), in view of Nomura (5,371,678), and Nomura

(6,421,659).

As per claim 16, Tanimoto discloses a method for calculating a navigation route between

first and second geographic location, comprising: providing a data set of node blocks of data,

data indicative of a roadway network of roads intersecting at intersection nodes, wherein data

includes proximity criteria indicative of intersection nodes (see columns 1-2, lines 39-26; and

columns 2-3, lines 53-34); accessing a first node record including data indicative of a first

geographic location, first node record included in a first node block (see column 3, lines 35-64),

calculating a bearing direction from first geographic location towards a second geographic

location based on proximity criteria included in first node block (see columns 3-5, lines 65-40).

Tanimoto does not disclose header of footer. However, Nomura ('678) discloses accessing one

of a header or footer included in first node block, header or footer including common feature

data indicative of traffic characteristics for roads (see columns 3-5, lines 50-39; and columns 6-7,

lines 60-44). Nomura ('659) discloses accessing a second node record included in first node

block, second node record including data indicative of a navigation route, navigation route

contiguous from first node record (see columns 11-13, lines 23-28). It would have been obvious

to one of ordinary skill in the art at the time the invention was made to modify the teach of

Tanimoto by combining accessing one of a header or footer included in first node block, header

or footer including common feature data indicative of traffic characteristics for roads, and

accessing a second node record included in first node block, second node record including data

indicative of a navigation route, navigation route contiguous from first node record for providing

accurate route guidance depending upon the direction the vehicle is approaching.

As per claim 17, Tanimoto discloses first and second node records are stored

contiguously in a memory storage device (see columns 2-3, lines 53-34).

As per claim 19, Tanimoto does not disclose bearing component. However, Nomura

('678) discloses identifying at least one adjacent node from a list of adjacent nodes, list stored in

first node record (see columns 8-9, lines 65-20), identifying at least one of a bearing component

and a distance component for each adjacent node (see columns 9-10, lines 21-55), and choosing

a next node from adjacent nodes based on at least one of proximity criteria and common feature

data (see columns 10-11, lines 56-51). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Tanimoto by combining identifying at least one of a bearing component and a distance component for each adjacent node, and choosing a next node from adjacent nodes based on at least one of proximity criteria and common feature data for setting the direction and distance of route travel from the point of start to the point of destination according to the result of calculation by the calculating block.

As per claim 20, Tanimoto does not disclose a scale factor. However, Nomura ('659) discloses choosing a next node based on at least one of a bearing component and a scale factor (see columns 3-4, lines 50-26). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Tanimoto by combining choosing a next node based on at least one of a bearing component and a scale factor enable the driver to be guided based on course selection which is optimized while providing flexibility with respect to the state of vehicle running.

As per claim 22, Tanimoto does not disclose calculate cost based on common feature. However, Nomura ('659) discloses calculating a cost from first geographic location to a next node, cost based on common feature data (see columns 10-11, lines 66-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Tanimoto by combining calculating a cost from first geographic location to a next node, cost based on common feature data to provide a best route guidance, a route is typically optimized for one of various parameters, for instance, minimum travel time, minimum travel distance, maximum use of freeway, or other parameters pertaining to movement of a vehicle on a road network.

As per claim 23, Nomura ('659) discloses a collection number of intersection nodes in node block (see columns 6-8, lines 39-19).

Claims 33-34, are navigation system corresponding to method claim 16 above. Therefore, they are rejected for the same rationales set forth as above.

Claims 35 and 37, are navigation system corresponding to method claims 17 and 19 above. Therefore, they are rejected for the same rationales set forth as above.

8.   Claims 18,21,24,36, and 38, are rejected under 35 U.S.C.103(a) as being unpatentable over Tanimoto (6,256,579), Nomura (5,371,678), and Nomura (6,421,659) as applied to claim 16 above, and further in view of Tanimoto et al. (6,263,277).

As per claim 18, Tanimoto, Nomura ('678), and Nomura ('659) do not disclose latitude and longitude coordinate for each of node block. However, Tanimoto et al. ('277) disclose proximity criteria includes at least one of latitude coordinate and longitude coordinate for each of node block (see columns 2-3, lines 61-35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Tanimoto, Nomura ('678), and Nomura ('659) by combining proximity criteria includes at least one of latitude coordinate and longitude coordinate for each of node block for determining an optimum route of travel.

As per claim 21, Tanimoto, Nomura ('678), and Nomura ('659) do not disclose road level and speed data. However, Tanimoto et al. ('277) disclose common feature data further comprises data indicative of at least road level and speed data (see the abstract; columns 1-2, lines 50-31; and columns 5-6, lines 20-13). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Tanimoto, Nomura ('678), and Nomura ('659) by combining common feature data further comprises data indicative of at

least road level and speed data capable of searching a most appropriate route of travel according

to a change in the running condition of the vehicle.

As per claim 24, Tanimoto et al. ('277) disclose node block comprising a group of node

records based on proximity data (see columns 2-3, lines 61-35).

Claim 36, is a navigation system corresponding to method claims 1 and 21 above.

Therefore, it is rejected for the same rationales set forth as above.

Claim 38, is a navigation system corresponding to method claim 18 above. Therefore, it

is rejected for the same rationales set forth as above.

Conclusion

9.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure:

. Yamada (4,937,753)

. Smith, Jr. et al. (5,285,391)

. Ohomori et al. (5,614,895)

10.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Dalena Tran whose telephone number is 703-308-8223. The

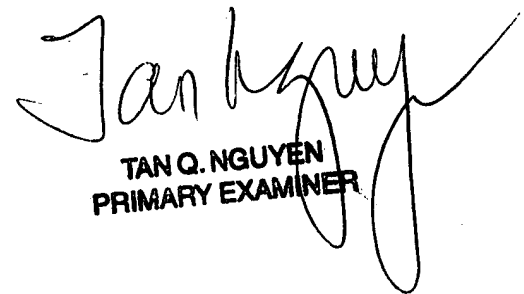examiner can normally be reached on M-F (7:30 AM-5:30 PM), off every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, William Cuchlinski can be reached on 703-308-3873. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-305-7687 for regular

communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is 703-308-1113.

/dt
March 6, 2003

TAN Q. NGUYEN
PRIMARY EXAMINER